

NTI

6<sup>th</sup>  
Grade

Day  
7

MIT

Mr. George

Day

Name:

Science

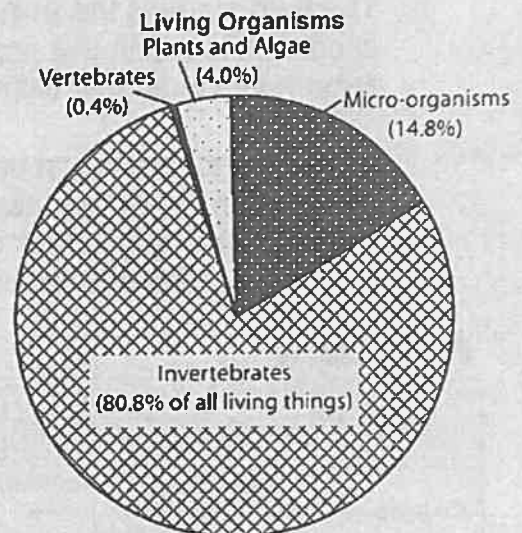
# Lesson 31

## Invertebrates

6<sup>th</sup> - NTI Day 7

The world of animals is split into two primary categories: **vertebrates** and **invertebrates**. Vertebrates are creatures that possess a backbone, including a wide array of animals like birds, fish, reptiles, amphibians, and mammals. On the contrary, invertebrates are organisms that lack a backbone, and surprisingly, they outnumber vertebrates on our planet. To comprehend the sheer number of invertebrates compared to other organisms, take a glance at the circle graph of living organisms provided below.

Invertebrates are quite versatile and can inhabit both land and water. Imagine stepping out into your backyard or a nearby park, what type of animal do you think you might spot? More often than not, you will see ants crawling on the ground and bees, flies, and butterflies perched on plants or fluttering around. These are all insects, which form the largest component of the Arthropod phylum, the most prominent group within invertebrates. **Arthropods** are found in almost all types of environments you can think of - forests, deserts, oceans, lakes, skies, underground, and even within our homes.



Insects and other arthropods have a sturdy external skeleton or **exoskeleton**, which serves as both a supportive structure and a protective shield, akin to a suit of armor. The term *insect* originates from Latin and Greek, meaning *cut into sections*. An insect's body indeed comprises three primary sections. The **head** hosts a pair of antennae, eyes, and a mouth. The middle segment, called the **thorax**, accommodates six legs and wings in some species. The last part is the **abdomen**, housing several vital systems like the respiratory, digestive, and reproductive systems.

A fascinating feature of insects is their process of **metamorphosis**, implying significant transformations during their life cycle. Insects must **molt** for growth and development, meaning they have to shed their non-expandable exoskeleton and then grow a larger one. Some insects, like the grasshopper, undergo **incomplete metamorphosis**, comprising three stages.

After hatching from an egg, these insects are termed **nymphs**, resembling smaller versions of the adults. As they molt and grow, they transform into adults.

Other insects undergo a **complete metamorphosis** with four distinct stages. The journey begins with the egg, from which a **larva** hatches. In this worm-like phase, the larva bears no resemblance to the adult form. The third stage is the **pupa** stage, where the larva seals itself within a cocoon. It is within this protective casing that the insect undergoes remarkable changes, ultimately emerging as an adult.

Invertebrates aren't just insects or arthropods; there are many more varieties on Earth. To delve deeper into the fascinating world of invertebrates, take a look at the Phyla Table provided, which offers detailed insights into various invertebrate phyla.

**Phyla Table**

<u>Phyla</u>	<u>Characteristics</u>	<u>Common Examples</u>
<b>Arthropods</b>	exoskeleton (hard outer skeleton), segmented, jointed	beetles, crabs, spiders, shrimp, centipedes
<b>Echinoderms</b>	marine, spiny skin	sand dollar, sea star, sea urchins
<b>Cnidarians</b>	aquatic, stinging cells, single opening	jellyfish, anemone, coral
<b>Mollusks</b>	soft body, most have shells	snails, clams, octopus, squid
<b>Annelids</b>	segmented worms, moist or wet environment	earthworms, leeches
<b>Nematodes</b>	thread-like, cylinder shaped	roundworms

## Lesson #7

### What is a PSA?

A PSA, or public service announcement, is a short ad meant to inform and persuade its audience. The topic is specific, usually a relevant social or health issue. The message can be about anything from the dangers of driving under the influence to preventing forest fires, maintaining good dental health, or adopting a pet from an animal shelter. The passages in this unit are modeled after public service announcements.

### Can you hear me now?

The World Health Organization warns that over a billion young people put their hearing at risk by simply attending sports events and rock concerts. And nearly half the population of American teens and young adults is regularly exposed to unsafe noise levels, just by using personal audio devices.

Two main factors cause damage to the ear and contribute to hearing loss. One of these is volume, or loudness. How loud is too loud? Noise levels are measured in decibels (dB), and any long-lasting sounds should be limited to 80 dB or less. That's the kind of noise in a school cafeteria or the sound a kitchen blender makes. Sounds louder than 85 dB are considered unsafe. Chainsaws, lawn mowers, and motorcycle engines create about 100 dB of sound. Thunderclaps, fireworks, and ambulance sirens can be 120 dB or higher. These can cause real physical pain.

The other important factor is duration, or the length of time a person is taking in noise. When the ears are exposed to intense noise over long periods, it is bad news. Noise-induced hearing loss can develop slowly and may not be noticeable at first. Tiny sensory hair cells line the inner ear and are responsible for transmitting sound impulses to the brain. Over time, those delicate hairs can break down or start to adapt to sound intensity. That can cause an affected person to crank up the volume even more, which only accelerates the damage.

Some noises pop up within our range, and hearing them just can't be helped. On the other hand, listening to loud music for hours at a time and using earbuds or headphones is within our control. Earbuds can actually cause significant damage over time. Because they sit in the ear and amplify sound, earbuds can increase the noise level as much as seven to nine decibels.

Researchers have come up with a guideline for listening with earbuds: the "60/60 Rule." Listen at sixty percent volume for no more than sixty minutes a day. Anything louder or longer puts hearing at risk. Remember, noise-induced hearing loss is the only type of hearing loss that is one hundred percent preventable.



Any sound that is painful can cause noise-induced hearing loss.

- RI.6.1 1. According to the passage, what is the purpose of a public service announcement?  
A) to inform only  
B) to entertain only  
C) to persuade only  
D) to both inform and persuade
- RI.6.2 2. Which of the following best summarizes the main idea?  
A) Chainsaws, lawn mowers, and motorcycles create 100dB of sound.  
B) Noise-induced hearing loss is the only kind of hearing loss.  
C) Noise-induced hearing loss is dangerous but preventable.  
D) none of the above
- L.6.5.B 3. According to the passage, sensory hairs in a person's ear adapt to sound over time. What is the cause-effect relationship? Reread paragraph four.  
A) Earbuds can no longer fit in the ears.  
B) A person can't hear and therefore, turns up the volume even more.  
C) A person will usually choose not to use earbuds anymore.  
D) A person can hear better once his ears adapt to loud noises.
- RI.6.1 4. List the two factors that contribute to noise-induced hearing loss.  
\_\_\_\_\_
- RI.6.1 5. According to the passage, how loud is a school cafeteria? \_\_\_\_\_
- RI.6.6 6. Explain the author's purpose in writing the part called, "Can you hear me now?" Write at least one complete sentence.  
\_\_\_\_\_  
\_\_\_\_\_
- RI.6.4 7. Match the words to their meanings.  
\_\_\_\_\_ amplify  
\_\_\_\_\_ decibel  
\_\_\_\_\_ duration  
\_\_\_\_\_ adapt  
A) to make larger, louder  
B) to modify or adjust to something  
C) measure for a unit of sound  
D) length of time something continues

Name: \_\_\_\_\_

# Lesson 31

## Invertebrates

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1. Which of the following is a vertebrate?

- A. Ant
- B. Bee
- C. Butterfly
- D. Bird

2. Where can invertebrates be found?

- A. Only in the desert
- B. Only in the forest
- C. Only in the ocean
- D. All of the above

3. What does an exoskeleton do for an insect?

- A. It helps them fly
- B. It serves as a protective shield
- C. It helps them eat
- D. It helps them reproduce

4. What does the term *insect* mean in Latin and Greek?

- A. Cut into sections
- B. Small creature
- C. Flying animal
- D. Crawling animal

5. What does an insect's abdomen contain?

- A. Wings
- B. Antennae
- C. Eyes
- D. Vital body systems like the respiratory, digestive, and reproductive systems

Name: \_\_\_\_\_

# Lesson 31

## Invertebrates

6. What is metamorphosis?

- A. The process of an insect learning to fly
- B. The process of an insect laying eggs
- C. Significant transformations during an insect's life cycle
- D. The process of an insect learning to crawl

7. What happens during molting?

- A. The insect lays eggs
- B. The insect learns to fly
- C. The insect sheds its outer covering and then grows a larger exoskeleton
- D. The insect learns to crawl

8. What does a nymph resemble?

- A. A smaller version of the adult insect
- B. A worm-like creature
- C. A completely different species
- D. A larger version of the adult insect

9. What happens during the pupa stage of complete metamorphosis?

- A. The insect learns to fly
- B. The insect lays eggs
- C. The insect transforms within a protective casing and ultimately emerges as an adult
- D. The insect learns to crawl

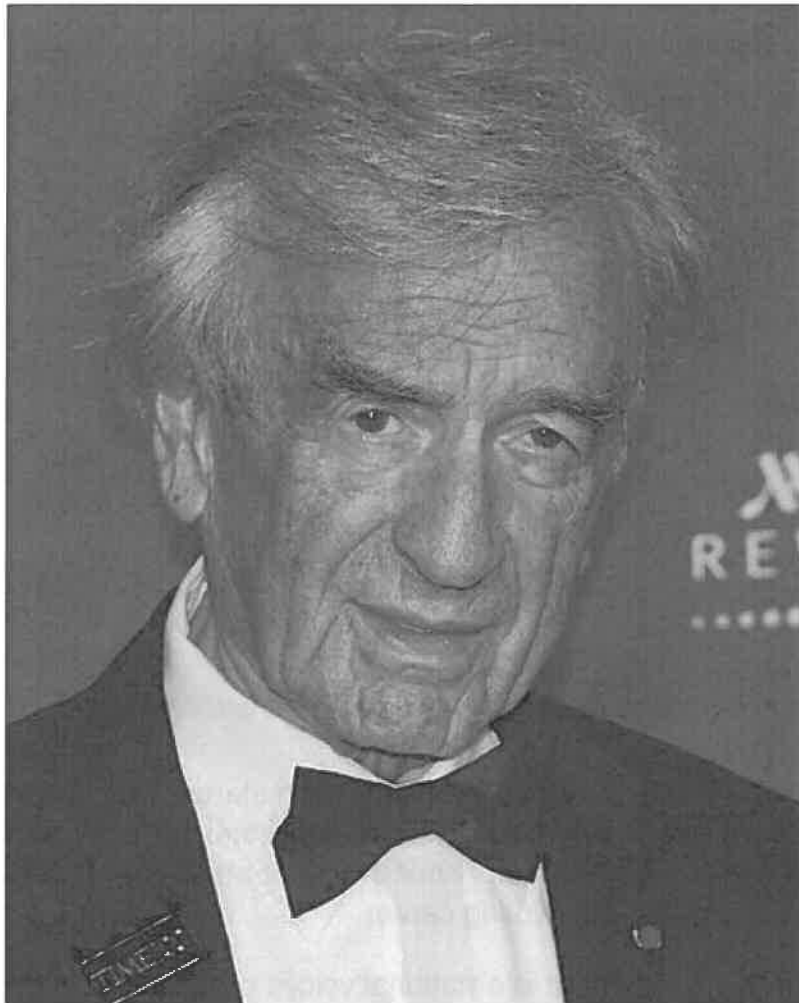
10. Invertebrates consist of only insects and arthropods.

- A. True
- B. False
- C. Sometimes
- D. Not mentioned in the article



## Elie Wiesel

by ReadWorks



Photograph of Elie Wiesel

*Photo Credit: David Shankbone, CC BY 3.0*

Elie Wiesel was born on September 30, 1928, in Sighet, Romania. He grew up in a tumultuous and violent time in Europe, with World War II raging from 1939 to 1945. It was an especially dangerous time for Wiesel's family because they were Jewish. Hitler, the leader of the German Nazi party, wanted to eliminate Jews and started to send Jewish people to concentration camps. At these camps, prisoners were forced to work as slaves, starved, or murdered. In 1944, Hitler's forces took control of Hungary and ordered for Jewish people in the region to be sent to camps. The first camp that the Wiesel family was sent to was Auschwitz, where his mother and younger sister were killed. He and his father were then sent to the Buchenwald camp in Germany, where his father passed away of starvation. But Elie Wiesel was still alive when the camp was liberated in 1945 with the end of World War II.



Photograph of child survivors being freed from Buchenwald

After his release, Elie Wiesel studied in Paris, where he soon started writing as a journalist. Thirteen years later, he published a memoir called *La Nuit*, which translates to 'Night.' It told the story of his time at the horrific concentration camps. He continued to write about the Holocaust, and ended up publishing almost thirty books in his long writing career.

Wiesel became one of the most important international voices on the Holocaust. He believed that it was necessary to keep the memory of concentration camps alive as a warning against public indifference to evil. One of Wiesel's most famous quotes is, "The opposite of love is not hate, but indifference." In 1986, Wiesel was awarded with the Nobel Peace Prize for his work as a writer and an activist.

## Vocabulary

### liberate

verb

definition: to free or let out.

*We liberated the hawk from its cage.*

Spanish: liberar, libertar, poner en libertad, dejar escapar

forms: liberated, liberates, liberating

### opposite

adjective

definition: If things are opposite, they are as different as they can be. Happy and sad are opposite feelings. Fast and slow are opposite speeds. East and west are opposite directions.

*My brother and I always want the opposite things. When he wants the car window open, I want it closed. When I want the lights on, he wants the lights off. When I want the weather warmer, he wants the weather colder.*

Spanish: opuesto, contrario

**1. Before you start reading...**

Here are the vocabulary words that will be in this reading. Let's see how well you already know them.

Check the box that shows how well you know each word. It's ok if you don't know them yet (this is not graded)!

	Don't know it	Have heard of it but not sure of its meaning	Know something about its meaning	Know it well
<b>liberate</b>				
<b>opposite</b>				

**2. Word Matcher**

Every word has other words that have similar meanings or even the exact same meaning (these are called synonyms!). Draw a line from each similar word or synonym to the vocabulary word that it matches!

emancipate

deliver

release

**liberate**

**opposite**

contrasting

conflicting

reverse

**3. After reading and exploring the words through some activities...**

Do you know these words better? Check the box that shows how well you know each word. It's ok if you don't know them yet (this is not graded)!

	Don't know it	Have heard of it but not sure of its meaning	Know something about its meaning	Know it well
<b>liberate</b>				
<b>opposite</b>				

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

1. Describe what happened to Elie Wiesel and his family at the concentration camps during World War II.
2. Why did Elie Wiesel believe it was necessary to keep the memory of concentration camps alive?
3. What did Elie Wiesel do to help make sure people never forget the horrors of the Holocaust and concentration camps?
4. What is the main idea of this text?

